ORDER NO. TD83050104C1

Service Manual

Radio

FM/AM/FM STEREO RADIO with
FEATHERWEIGHT STEREO HEADPHONES

RF-444/©

■SPECIFICATIONS

Frequency Range:	FM88～108MHz
	AM525～1610kHz
Intermediate Frequency:	FM10.7MHz
	AM455kHz
Sensitivity:	FM1.8μV
	(−6dB, Limit. Sens.)
	AM 56.3μV/m for 1mW Output
Power Output:	60mW (30mW×2) Maximum
Batteries:	3V (Two "AAA" Size Penlight Batteries)
	(Panasonic UM-4 or equivalent)
Dimensions:	72(Wide)×117(High)×25(Deep)mm
	(2-7/8″×4-5/8″×1″)
Weight:	121g (4.2 oz) Without Batteries
Impedance:	Headphone Jack ·····32Ω

●Featherweight Stereo Headphones

Input:	1mW (Max. 25mW)
Impedance:	32Ω
Connection Cord:	1.5m (59 1/16″)
Weight:	55g (2 oz.) with cord

Weights and dimensions shown are approximate.
(Les poide et dimensions mentionnes sont approximatifs).
Specifications are subject to change without notice.

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DISASSEMBLY INSTRUCTIONS

Procedure	To remove—	Remove—	Shown in Fig—
1	Rear Cabinet Ass'y	Clip ·····(A)×1	1
2		Battery Cover ·····(B)×1	1
3		Screw (2×8) ·····(C)×2	2
4		Cabinet Cover ·····(D)×1	3

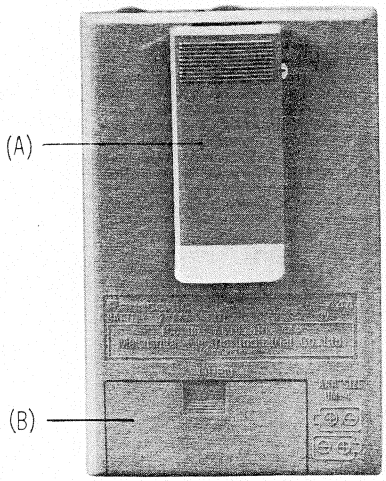


Fig. 1

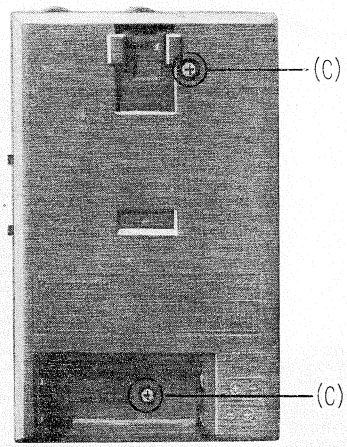


Fig. 2

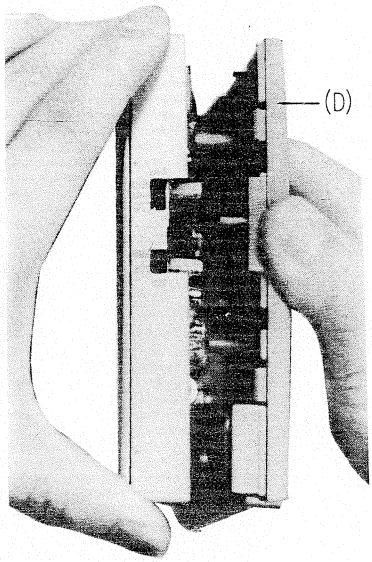


Fig. 3

DIAL THREADING

DIAL CORD LENGTH: 36.5cm (14-9/64")

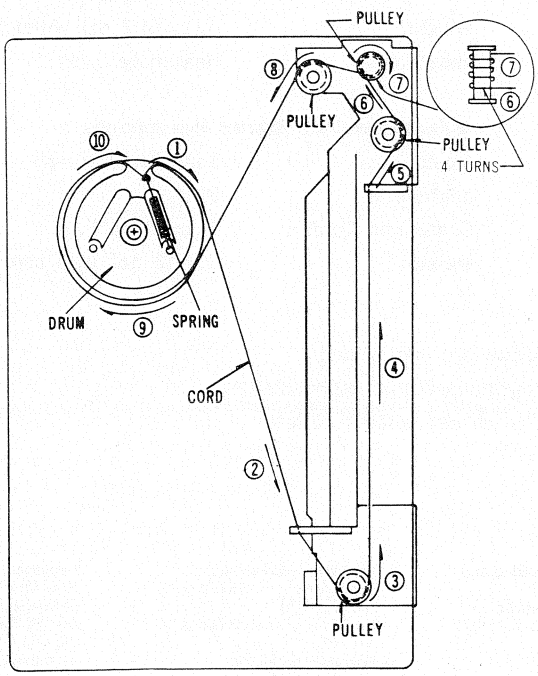


Fig. 4

■ALIGNMENT POINTS

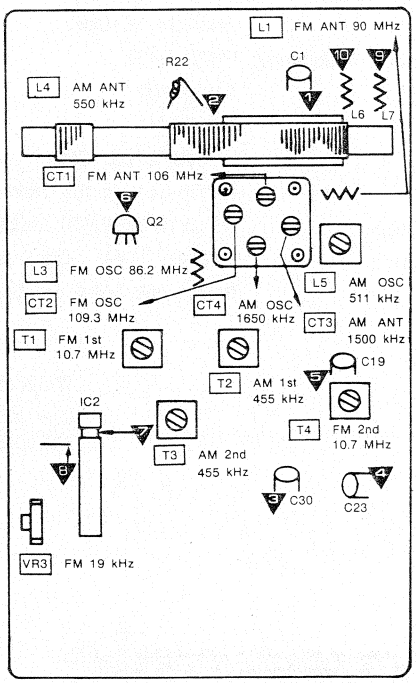


Fig. 5

MEASUREMENTS AND ADJUSTMENTS

■ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes:
1. Set volume control to maximum.
2. Set band switch to AM or FMST.
3. Set power switch to ON.
4. Set power source voltage to 3 volts DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING (DISTANCE)	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
	AM-IF & RF ALIGNMENT					
(1)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 1000 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT)	Adjust for maximum output.
(2)	〃	511 kHz	Tuning capacitor fully closed.	〃	L5 (AM OSC Coil)	〃
(3)	〃	1650 kHz	Tuning capacitor fully open.	〃	CT4 (AM OSC Trimmer)	〃
(4)	〃	550 kHz	Tune to signal.	〃	(*1)L4 (AM ANT Coil)	Adjust for maximum output. Adjust L4 by moving coil bobbin along ferrite core.
(5)	〃	1500 kHz	Tune to signal.	〃	CT3 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).
	(*1) Cement antenna bobbin with wax after completing alignment.					
	FM-IF ALIGNMENT					
(6)	High side thru. 0.001μF to point ▼E Negative side to point ▼E	10.7 MHz	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point ▼A, Negative side to point ▼E.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 6).
(7)	〃	〃	〃	〃	T4 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 7).
	FM-RF ALIGNMENT					
(8)	Connect point ▼A through FM dummy antenna Negative side to point ▼E (Refer to fig. 8.)	86.2 MHz	Tuning capacitor fully closed.	Output meter across voice coil.	L3 (FM OSC Coil)	(*2)Adjust for maximum output.
(9)	〃	109.3 MHz	Tuning capacitor fully open.	〃	CT2 (FM OSC Trimmer)	〃
(10)	〃	90 MHz	Tune to signal.	〃	L1 (FM ANT Coil)	〃
(11)	〃	106 MHz	Tune to signal.	〃	CT1 (FM ANT Trimmer)	Adjust for maximum output. Repeat steps (8)~(11).
	(*2) Three output responses will be present; proper tuning is the center frequency.					

■SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATON	REMARKS
Adjustment of pilot signal.	90 MHz, 60 dB	▼A ···(+)side ▼E ···(−)side	VR_3	19 kHz	Adjust VR_3 for 19 kHz (±100Hz) reading on electronics counter.

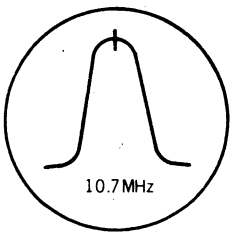


Fig. 6

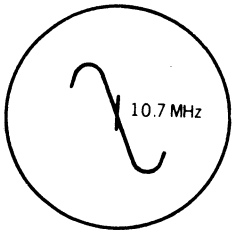


Fig. 7

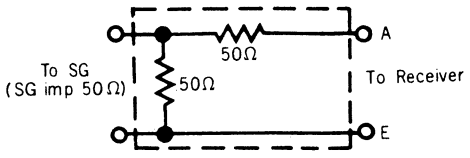
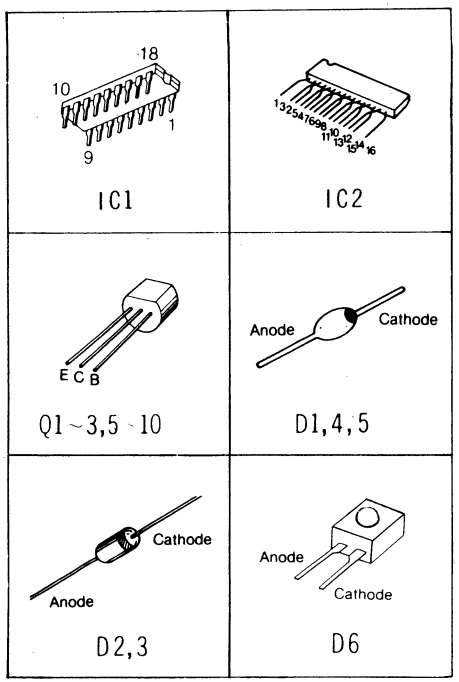


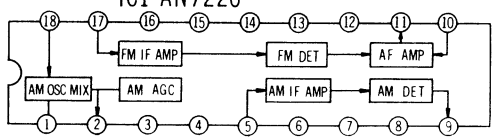
Fig. 8 FM Dummy Antenna

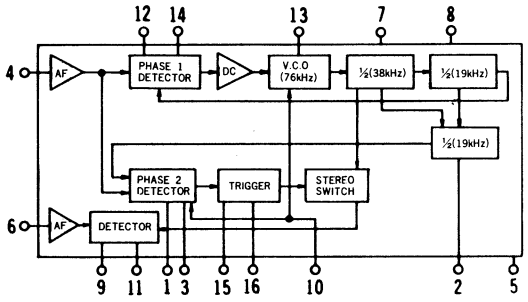
SCHEMATIC DIAGRAM MODEL RF-444/©

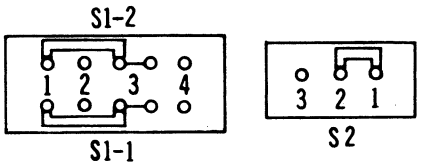
Q1, 2	D2	Q3	D3	IC1	D4, 5
2SA838	**MA150**	**2SC829**	**RVDSD113**	**AN7226**	**RVDKB265G**
FM RF AMP. CONV	D. AGC	FM IF AMP	AFC	AM: OSC MIX, IF AMP DET FM: IF AMP DET/AF AMP	AOC

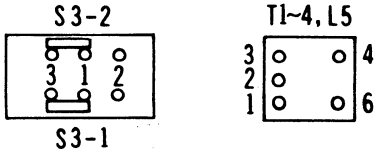


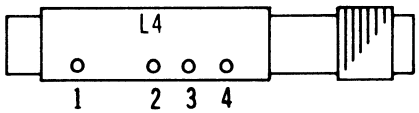
D1
RVDKB265E
AOC

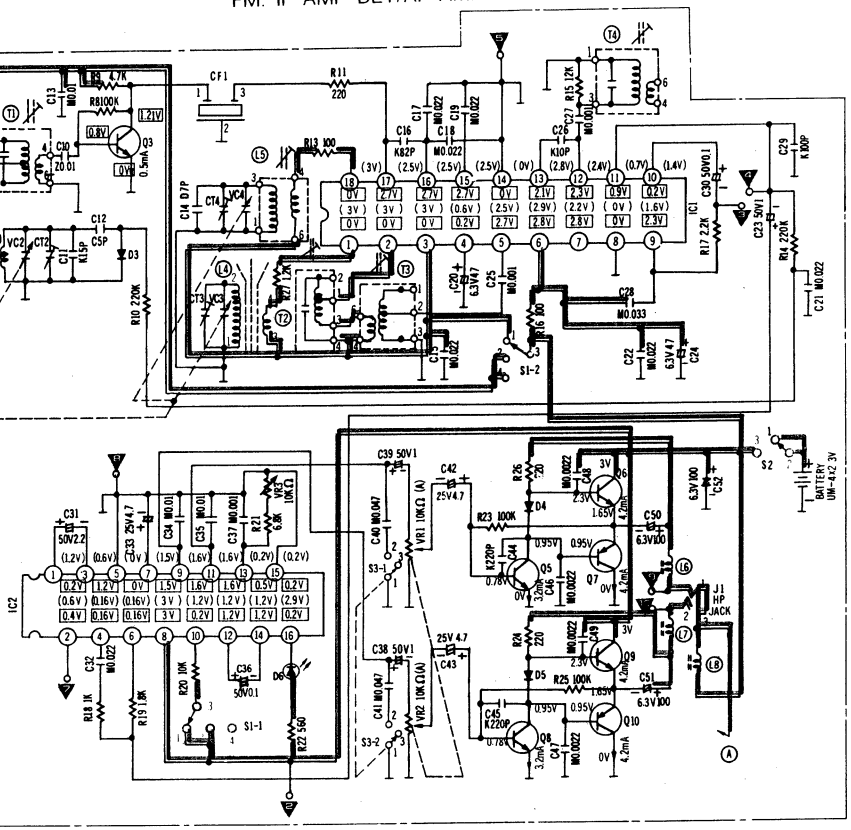










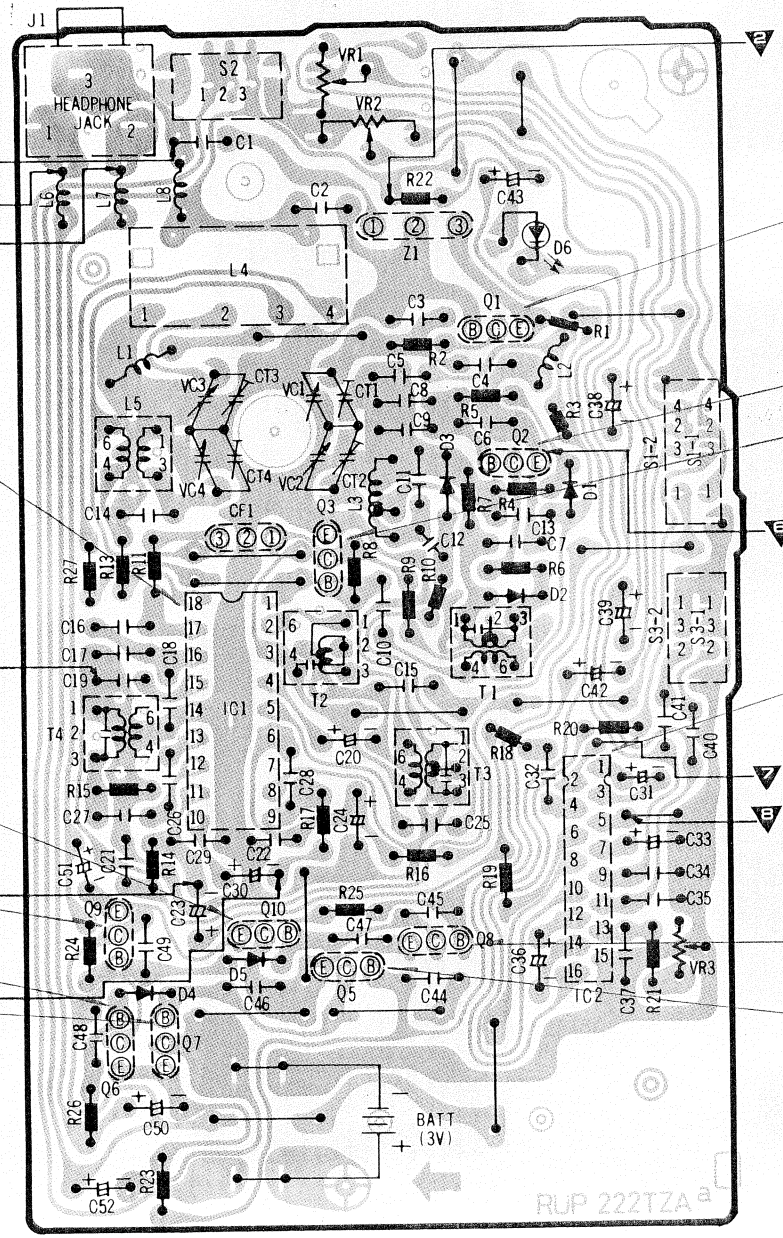


IC2	D6	Q5,8	Q7, 10	Q6, 9
RVIBA1360	**LN25RP**	**2SC1684**	**2SA564**	**2SC1684**
FM MPX	STEREO EYE	DRIVE	POWER AMP	POWER AMP

Notes:

1. S1-1, S1-2: Band switch in "FM·ST" position.
   (①···FM·ST, ②···FM, ③···AM)
2. S2: Power switch in "OFF" position, (1···OFF, 3···ON)
3. S3-1, S3-2: Tone switch in "HIGH" position.
   (2·····LOW, 3·····HIGH)
4. DC voltage measurements are taken with electronics voltmeter based on negative terminal of Battery.
   □·····FM position, ( )·····AM position.
5. Battery Current no signal·····13mA
   Maximum output·····20mA
6. VR1, 2·····Volume Control
   VR3·····VCO Adjustment
7. The mark (▼) Shows test point. e.g.
   ▼·····Test point 1.

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RF-444/©



IC1

	FM	AM		FM	AM
1	0 V	3 V	10	0.2V	1.4V
2	0 V	3 V	11	0.9V	0.7V
3	0 V	3 V	12	2.3V	2.4V
4	0.2V	0.6V	13	2.1V	2.8V
5	2.7V	2.5V	14	0 V	0 V
6	2.8V	2.9V	15	2.7V	2.5V
7	2.8V	2.2V	16	2.7V	2.5V
8	0 V	0 V	17	2.7V	2.5V
9	2.3V	1.6 V	18	0 2V	3 V

Q1

	FM
C	0.2 V
B	0.12V
E	0.84V
Ie	1mA

Q2

	FM
C	0.18V
B	1.83V
E	2.5 V
Ie	0.5mA

Q3

	FM
C	1.21V
B	0.8 V
E	0 V
Ie	0.5mA

IC2

	FM	AM		FM	AM
1	0.2 V	1.2 V	9	1.6V	1.6V
2	0.4 V	0.6 V	10	0.2V	1.2V
3	1.2 V	0.6 V	11	1.6V	1.6V
4	0.16V	0.16V	12	1.2V	1.6V
5	0 V	0 V	13	0.5V	0.2V
6	0.16V	0.16V	14	1.2V	1.2V
7	1.5 V	1.5 V	15	0.2V	0.2V
8	3 V	3 V	16	0.2V	2.9V

Q9

C	3 V
B	2.3 V
E	1.65V
Ie	4.2mA

Q10

C	0 V
B	0.95V
E	1.65V
Ie	4.2mA

Q6

C	3 V
B	2.3 V
E	1.65V
Ie	4.2mA

Q7

C	0 V
B	0.95V
E	1.65V
Ie	4.2mA

Q5

C	0.95V
B	0.78V
E	0 V
Ie	3.2mA

Q8

C	0.95V
B	0.78V
E	0 V
Ie	3.2mA

RF-444/©

CABINET AND ELECTRICAL PARTS LOCATION

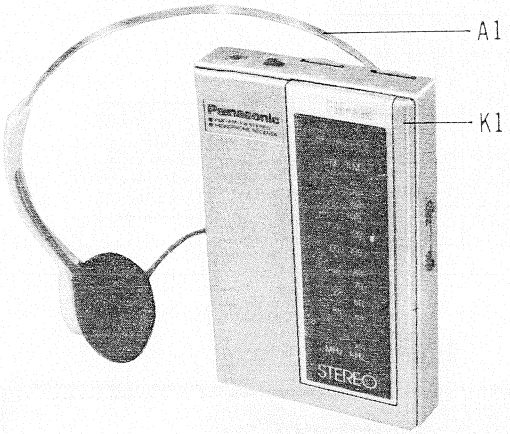


Fig. 9

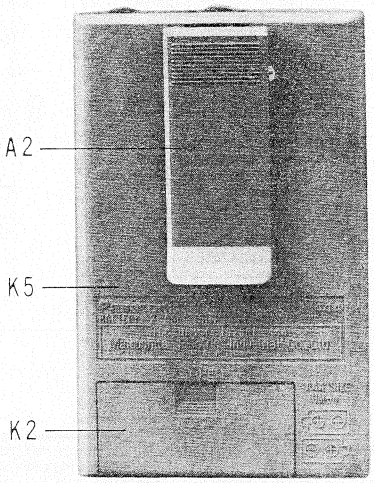


Fig. 10

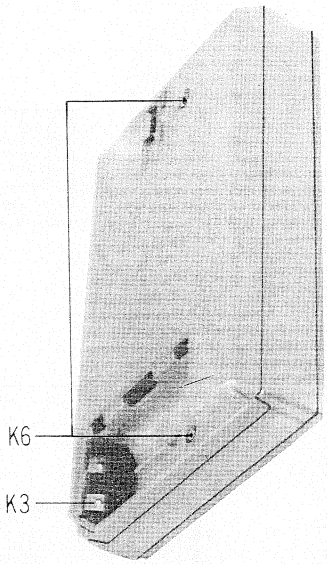


Fig. 11

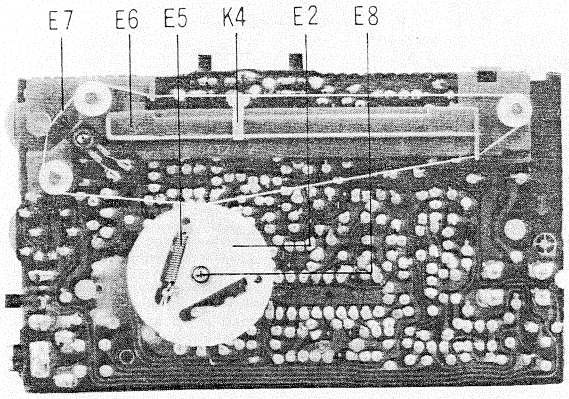


Fig. 12

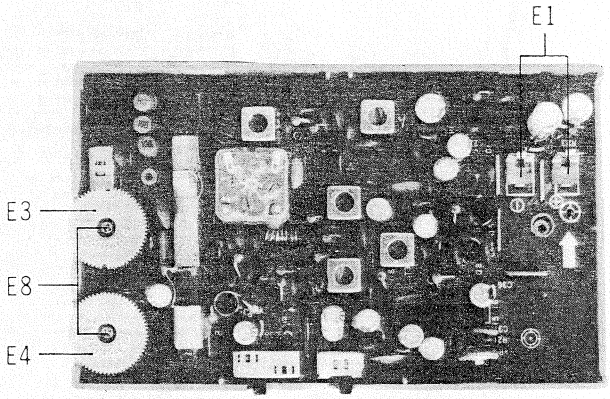


Fig. 13

PACKING MATERIALS

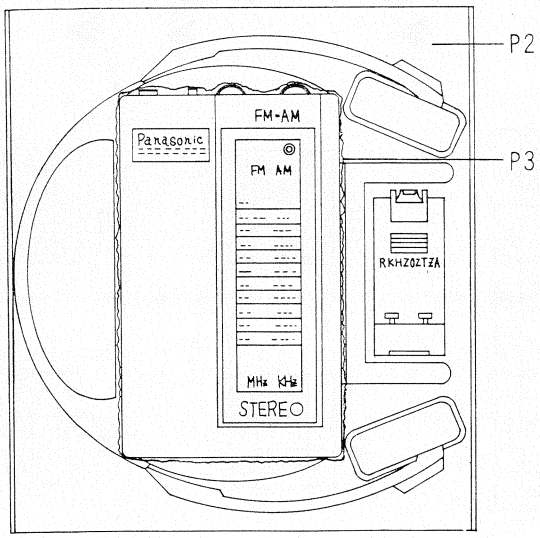


Fig. 14

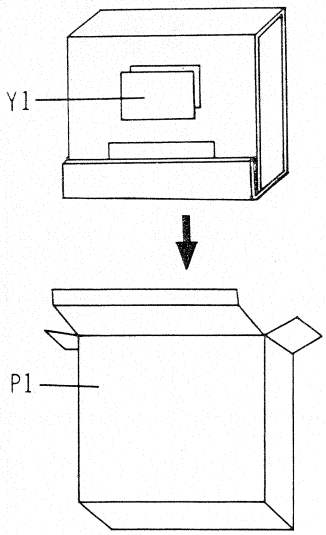


Fig. 15

■REPLACEMENT PARTS LIST ·····Model RF-444/© (TD83050104C1)

NOTES:
1. ⚠ indicates that only parts specified by the manufacturer be used for safety.
2. The S mark is service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUIT, TRANSISTORS AND DIODES				
IC1	AN7226	IC	1	
IC2	RVIBA1360	IC	1	
Q1,2	2SA838-B	Transistor (Si)	2	S
Q3	2SC829-B	Transistor (Si)	1	
Q5,8	2SC1684HS	Transistor (Si)	2	
Q6,9	2SC1684HR	Transistor (Si)	2	
Q7,10	2SA564	Transistor (Si)	2	S
D1	RVDKB265E	Diode (Si)	1	S
D2	MA161	Diode (Si)	1	S
D3	RVDSD113	Diode (Si)	1	S
D4,5	RVDKB265G	Diode (Si)	2	S
D6	LN25RP	Diode (Ga)	1	S
COILS AND TRANSFORMERS				
L1	RLD4Y44	Antenna Coil, FM	1	TAMACO
L3	RLO4Y60	Oscillator Coil, FM	1	
L4	RLF2Y31	Antenna Coil, AM	1	
L5	RLO2B107	Oscillator Coil, AM	1	
T1	RLI4B156	IFT, FM 1st	1	
T2	RLI2B216	IFT, AM 1st	1	
T3	RLI2B217	IFT, AM 2nd	1	
T4	RLI4B153	IFT, FM 2nd	1	
VARIABLE RESISTORS				
VR1,2	EVUCAAT65C14	Variable Resistor, 10KΩ (C)/Volume Control,	1	TAMACO
VR3	RVNAC14B2	Variable Resistor, 10KΩ (B)	1	
VARIABLE CAPACITOR				
VC1~4	RCV4LC4VN	Tuning Capacitor W/Trimmer Capacitor (CT1~4)	1	
CERAMIC FILTER				
CF1	RVFSFE107MAZ	Ceramic Filter, FM	1	TAMACO

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
COMPONENT COMBINATION				
Z1	RXABPWB5	Component Combination	1	
SWITCHES				
S1	RSS3B25Z	Switch, Band (FM ST/FM/AM)	1	TAMACO
S2	RSS2B40Z	Switch, Power	1	
S3	RSS2B41Z	Switch, Tone	1	
JACK				
J1	RJJ1D15Z	Jack, Headphones	1	
RESISTORS (Value is in OHMS)				
R1	ERD25FJ222	2.2K ¼W Carbon	1	S
R2	ERD25FJ101	100 ¼W Carbon	1	S
R3	ERD25FJ102	1K ¼W Carbon	1	S
R4	ERD25FJ152	1.5K ¼W Carbon	1	S
R5	ERD25FJ332	3.3K ¼W Carbon	1	S
R6	ERD25FJ101	100 ¼W Carbon	1	S
R7	ERD25FJ472	4.7K ¼W Carbon	1	S
R8	ERD25TJ104	100K ¼W Carbon	1	S
R9	ERD25FJ472	4.7K ¼W Carbon	1	S
R10	ERD25TJ224	220K ¼W Carbon	1	S
R11	ERD25FJ221	220 ¼W Carbon	1	S
R13	ERD25FJ101	100 ¼W Carbon	1	S
R14	ERD25TJ224	220K ¼W Carbon	1	S
R15	ERD25FJ562	5.6K ¼W Carbon	1	S
R16	ERD25FJ101	100 ¼W Carbon	1	S
R17	ERD25FJ222	2.2K ¼W Carbon	1	S
R18	ERD25FJ102	1K ¼W Carbon	1	S
R19	ERD25FJ182	1.8K ¼W Carbon	1	S
R20	ERD25FJ103	10K ¼W Carbon	1	S
R21	ERD25FJ682	6.8K ¼W Carbon	1	S
R22	ERD25FJ561	560 ¼W Carbon	1	S
R23	ERD25TJ104	100K ¼W Carbon	1	S
R24	ERD25FJ221	220 ¼W Carbon	1	S
R25	ERD25TJ104	100K ¼W Carbon	1	S
R26	ERD25FJ221	220 ¼W Carbon	1	S
R27	ERD25FJ122	1.2K ¼W Carbon	1	S
CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)				
C1	ECCD1H101K	100P 50V Ceramic	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C2	ECFVD333MD	0.033 25V Semi-Conductor	1	
C3	ECKD1H103ZF	0.01 50V Ceramic	1	
C4	ECCD1H050C	5P 50V Ceramic	1	
C5	ECKD1H102MD	0.001 50V Ceramic	1	
C6	ECCD1H330KC	33P 50V Ceramic	1	
C7	ECCD1H070DC	7P 50V Ceramic	1	
C8	ECKD1H102KB	0.001 50V Ceramic	1	
C9	ECKD1H102MD	0.001 50V Ceramic	1	
C10	ECKD1H103ZF	0.01 50V Ceramic	1	
C11	ECCD1H150KC	15P 50V Ceramic	1	
C12	ECCD1H050CC	5P 50V Ceramic	1	
C13	ECFVD103MD	0.01 25V Semi-Conductor	1	
C14	ECCD1H070DC	7P 50V Ceramic	1	
C15	ECFVD223MD	0.022 25V Semi-Conductor	1	
C16	ECCD1H820K	82P 50V Ceramic	1	
C17,18,19	ECFVD223MD	0.022 25V Semi-Conductor	3	
C20	ECEA1AS471	470 10V Electrolytic	1	S
C21,22	ECFVD223MD	0.022 25V Semi-Conductor	2	
C23	ECEA50Z1	1 50V Electrolytic	1	S
C24	ECEA0JS471	470 6.3V Electrolytic	1	S
C25	ECKD1H102MD	0.001 50V Ceramic	1	
C26	ECCD1H100KC	10P 50V Ceramic	1	
C27	ECKD1H102MD	0.001 50V Ceramic	1	
C28	ECFVD333MD	0.033 25V Semi-Conductor	1	
C29	ECCD1H101K	100P 50V Ceramic	1	
C30	ECEA50Z1	1 50V Electrolytic	1	S
C31	ECEA50Z2R2	2.2 50V Electrolytic	1	S
C32	ECFVD223MD	0.022 25V Semi-Conductor	1	
C33	ECEA25Z4R7	4.7 25V Electrolytic	1	S
C34	ECFVD103MD	0.01 25V Electrolytic	1	
C36,38,39	ECEA50ZR1	0.1 50V Electrolytic	3	
C40,41	ECFVD473MD	0.047 25V Semi-Conductor	2	
C42,43	ECEA25Z4R7	4.7 25V Electrolytic	2	S
C45	ECCD1H221K	220P 50V Ceramic	1	
C46,47,48,49	ECKD1H222MD	0.0022 50V Ceramic	4	
C50,51,52	ECEA1AS101	100 10V Electrolytic	3	S
CABINET PARTS				
K1	RYMF444MKT8	Front Cabinet Ass'y	1	TAMACO
K2	RKK207TZ7	Battery Cover	1	TAMACO
K3	RJC215TZ	Terminal, Battery+Side, −Side	1	TAMACO
K4	RDP214TZ	Pointer Dial	1	TAMACO
K5	RKF213TZ7	Rear Cabinet	1	TAMACO
K6	XTN2+8B	Screw	2	S
ELECTRICAL PARTS				
E1	RJC214TZ	Terminal, Battery+Side, −Side	2	TAMACO

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
E2	RDD205TZ	Drum, Dial	1	TAMACO
E3	RBT208TZ	Knob, Volume	1	TAMACO
E4	RBT209TZ	Knob, Tuning	1	TAMACO
E5	RDS2061TZ	Spring, Dial	1	TAMACO
E6	RZAF444MKT	Chassis, Dial Ass'y	1	TAMACO
E7	RDZ03Y	Cord, Dial	1 Roll	
E8	XSN17+4	Screw	3	
ACCESSORIES				
A1	RD9266MKT	Headphones	1	TAMACO
A2	RKH202TZ7	Belt clipper	1	TAMACO
PACKING MATERIALS				
P1	RPK238TZ	Gift Box (U.S.A only)	1	TAMACO
P1	RPK238TY	Gift Box (Canada only)	1	TAMACO
P2	RPN1182TZ	Pad	1	TAMACO
P3	RPP245TZ	Polyethylene Cover	1	TAMACO
PRINTED MATERIALS				
Y1	RQX315TZ	Instruction Book (Canada only)	1	TAMACO

ORDER NO. TD 84030133S1

Service Manual

Radio

Supplement-1

FM/AM/FM STEREO RADIO with FEATHERWEIGHT STEREO HEADPHONES

RF-444/©

Please use this manual together with the service manual for model No. RF-444/© order No. TD83050104C1

MAJOR CHANGES:

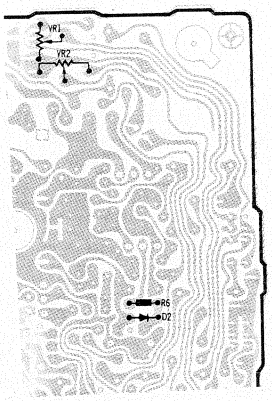
The circuit board has been changed from production of March 1984 onward.

CHANGES

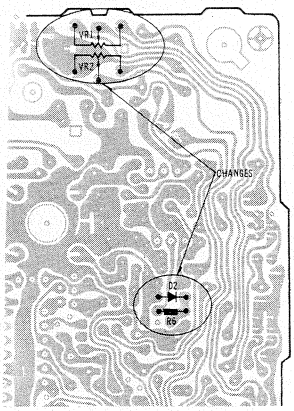
■REPLACEMENT PARTS LIST

Ref No.	Change of Part NO.		Part Name & Description	Per Set	Remark	Price
	RF-444/© (TD83050104C1)	RF-444/© (TD84030133S1)				
VR1, 2	EVUCAAT65C14	RVV2H1C14	Variable Resistor, 10K Ω(C)/Volume	1	TAMACO	
E3	RBT208TZ	RBT208TY	Knob, Volume	1	TAMACO	

■CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



Model RF-444/©
(TD83050104C1)



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(TD84030133S1)

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